

**AMENDMENT AND PETITION FOR
EXTENSION OF TIME****Attorney Docket No.: Case 6152****Patent Application Serial No. 09/909,592****Reply to Office Action Mailed October 1, 2003****Art Unit: 1764**

REMARKS/ARGUMENTS

The Examiner's Office Action mailed October 1, 2003, has been carefully reviewed. Reconsideration of this application, in view of the above amendments and the following remarks, is respectfully requested.

Claims 1 - 20 have been canceled without prejudice. New claims 21 - 36 have been added. As such, claims 21 - 35 remain in the case.

The Examiner objected to claim 8 under 37 CFR §1.75(c) as being of improper dependent form for failing to further limit the subject matter of a previous claim (i.e., claim 4), and required Applicant to either cancel the claim, amend it to place it in proper dependent form, or rewrite the claim in independent form.

The Examiner also rejected claims 1 - 12 and 16 - 18 under 35 USC §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. In particular, the Examiner stated that as regards claim 1, it was unclear as to the structural limitation Applicants are attempting to recite by "a CO₂ solvent supplied to the bed" since a solvent is not considered an element of the apparatus. Regarding claim 3, the Examiner stated that the language of the claim is drawn to a method limitation which renders the claim indefinite, as it is unclear as to the structural limitation Applicants are attempting to recite, since the "solvent" is not considered an element of the apparatus. Regarding claim 6, the Examiner stated that the language of the claim is drawn to a method limitation which renders the claim vague and indefinite, as it is unclear as to the structural limitation Applicants are attempting to recite by "the means...includes transporting the portion of the solvent which contains the removed, preselected and dissolved CO₂" since "transporting" the solvent is not considered an element of the apparatus but a process limitation. Regarding claims 11, 12, 17 and 18, the Examiner stated that the language of the claims is drawn to a process limitation which renders the claims vague and indefinite, as it is unclear as to the structural

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limitation Applicants are attempting to recite by "at least/no more than 90% of the original CO₂ concentration of the gas is dissolved..." since the percentage of dissolved CO₂ is not considered an element of the apparatus. Regarding claim 16, the Examiner stated that the language of the claim is drawn to a method limitation which renders the claim vague and indefinite, as it is unclear as to the structural limitation Applicants are attempting to recite by "...determined by the flow rate of the water divided by the superficial velocity of the water" since the flow rate, the superficial velocity, and the determined ratio are not considered elements of the apparatus.

The Examiner also rejected claims 1 - 3, 5 - 7, 11 - 18 and 20 under 35 USC §102(b) as being anticipated by Schnur (US 2,719,032); claims 1 - 3, 5 - 7, 11 and 12 under 35 USC §102(b) as being anticipated by Fischerstrom et al. (US 2,708,571); and claims 4 and 8 - 10 under 35 USC §103(a) as being unpatentable over Schnur in view of Rau et al. (*Energy Conversion & Management* 40, pages 1803 - 1818, 1999). While not explicitly stated in the Office Action, it also appears that the Examiner rejected claim 19 under 35 USC §103(a) as being unpatentable over Schnur in view of Rau et al.

The Examiner also cited, but did not apply, U.S. 5,484,535 to William Downs and U.S. 5,800,705 to Ernest W. Downs, and the Examiner stated that these patents were "provided to illustrate Applicant's relevant, related inventions." However, as the Examiner will note from a careful review of these U.S. patents, the inventor of the '705 patent is not William Downs, the co-inventor of the present application, but rather Ernest W. Downs. Regarding the Examiner's observation concerning the relevance or related nature of either patent, it is noted that neither was applied in any of the Examiner's rejections of the claims.

The Examiner will note that claims 1 - 20 have been cancelled, and claims 21 - 36 have been added to particularly point out and clearly define Applicant's claimed invention.

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The specification has also been amended at paragraph [043] as suggested by the Examiner, and at paragraph [028] to correct a typographical error.

New claim 21 recites a structure which is neither taught nor suggested by the cited references, taken singly or in combination. In particular, neither Schnur nor Fischerstrom et al. teach or suggest a discrete reaction bed, disposed between an intake channel and a drainage channel, which: (a) is capable of containing a buffering agent such as limestone, and (b) possesses its own inlet and outlet (as compared to the intake and drainage channels of the larger system) wherein the inlet is positioned vertically beneath the outlet. Instead, these references contemplate a simple diffusion based process wherein gas is contacted with a solvent in a single chamber. It should also be noted that Schnur requires the solvent to be force-pumped through the system, insofar as Schnur's apparatus includes an intake which is positioned beneath the drain - thereby meaning that the positioning of the intake and the drain do not induce water flow (let alone water flow through a discrete reaction bed).

Similarly, new claim 28 is drawn to a system for removing a pre-selected amount of carbon dioxide from flue gas containing the carbon dioxide by dissolving the carbon dioxide in water which is neither taught nor suggested by the cited references. The system comprises a limestone bed arranged in a plurality of spaced apart limestone bed rows having open rows therebetween. These open rows are alternately water inlet channels for providing water into the limestone bed rows and water outlet channels for receiving water from the limestone bed rows. Both the water inlet channels and water outlet channels are defined by walls, the water inlet channels having means for conveying the water into the limestone bed rows, while the water outlet channels having means for conveying the water out of the limestone bed rows. Importantly, the driving force causing the water to flow through the limestone bed rows is the force of gravity as exerted by the differential head defined by the difference in elevation between a water level in the water inlet channel and

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the water level in the limestone bed rows. The flue gas containing the carbon dioxide is conveyed by flue gas providing means into the limestone bed rows and water contained therein so that the flue gas percolates through the limestone and water. Finally, water supply channel means provide water into the water inlet channels, and water drain channel means receive the water from the water outlet channels.

Nothing in any of the cited references would suggest or provide motivation for any combination of the references, including the combination posited by the Examiner in the most recent Office Action, and even if such a combination were made, would not teach or suggest Applicants' claimed invention. As such, it is respectfully submitted that claims 21 - 35 are patentably distinguishable over the cited references taken singly or in combination and are thus allowable under 35 USC §§102(b) and 103(a).

Applicants have endeavored to make the foregoing response sufficiently complete to permit prompt, favorable action on the subject patent application. In the event that the Examiner believes, after consideration of this response, that the prosecution of the subject patent application would be expedited by an interview with an authorized representative of the applicants, the Examiner is invited to contact the undersigned at (330) 860-6710.

Respectfully submitted,

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